and 25% to 50% of these require a thoracostomy tube. Fiberoptic bronchoscopy with transbronchial biopsy has an overall death rate of 0.1% to 0.2%. Pneumothorax occurs in 5% to 10% of patients. Brisk bleeding is uncommon. Open-lung biopsy in cases of chronic diffuse infiltrative lung disease has a mortality of 1% to 2%. This procedure requires general anesthesia.

Finally, the choice of the invasive diagnostic approach depends on the skill of the physician doing the procedure. Clearly, a lack of familiarity with the technique increases the risk to a patient and may impede the securing of diagnostic material.

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Management of Childhood Asthma

ASTHMA IN CHILDHOOD originates from a variety of intrinsic and acquired factors that cause bronchial hyperreactivity and impair airways clearance on a chronic, recurrent basis. Respiratory tract disease or injury in early infancy may result in this syndrome, which can persist into adulthood as recurrent bronchospasm or permanent loss of elastic recoil with chronic emphysematous changes.

Although asthma clinically exhibits a continuum of respiratory impairment, newer therapies are directed toward both the acute and chronic states of the syndrome.

Status asthmaticus is a medical emergency. The basic principles of treatment are unchanged and include correction of hypoxemia, adequate hydration and treatment of the underlying infection. While repeated epinephrine injections have been the mainstay of emergency bronchodilator therapy, more recent evidence supports the equal efficacy of inhaled long-acting β_2-adrenergic agents such as albuterol and fenoterol. A greater degree of bronchodilation, longer duration and less adverse reactions represent clear advantages of these agents. Continuous intravenous administration of theophylline ethylenediamine (aminophylline; dosage range, 0.65 to 0.85 mg per kg of body weight an hour, validated by serum concentrations of 10 to 20 μg per ml), corticosteroid infusion and, on occasion, intravenously given isoproterenol have reduced the need for assisted ventilation and the mortality in childhood status asthmaticus.

Much effort has been put into the management of chronic asthma in children. Optimal management reduces impairment, promotes growth and reduces the incidence of life-threatening episodes of respiratory failure. Theophylline given by mouth remains the principal medication indicated in maintenance therapy. Blood theophylline analysis by high performance liquid chromatography (HPLC) allows titration of dosages to suit individual patients. Compliance and continual efficacy are improved with the use of sustained-release tablets and granules that are better absorbed, enhance bronchodilation and increase palatability on a 12-hour (versus 4- to 6-hour) schedule. Inhaled β_2 agents (via portable nebulizer for young children or hand-held metered-dose devices for older children) are helpful supplemental therapies. The long-acting agonists are particularly important in this context, providing sustained bronchodilation with little rebound bronchospasm. Oral β-agonists may be used but are less desirable because of the adverse effects. Short-course corticosteroid administration has been shown to abort impending status asthmaticus with little impact on adrenal function.

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